GLOBAL SKIN HEALTH

A NEW DIAGNOSTIC TOOL TO EVALUATE SKIN BIOLOGICAL AGE.

A Foucher [1] - V Piffaut [2] - H Nocairi [3] - D Bernard [1] - S Oh [4] - H Lee [4] - C Lee [5] - S Nouveau [1] - N Cavusoglu [1]

L'oréal, Knowledge And Performance, Aulnay Sous Bois, France [1] - L'oreal, Knowledge And Performance, Aulnay Sous Bois, France [2] - L'oréal, Scientific Calculs, Aulnay Sous Bois, France [3] - Nanoentek, Research And Development, Seoul, Republic Of Korea [4] - Nanoentek, Research And Develoment, Seoul, Republic Of Korea [5]

Introduction: Chronological and biological ages can differ markedly through the appearance of facial features. While biomarkers have been usually linked to biological mechanisms, we went a step further and analyzed the association of biomarkers' relative amounts with the appearance and scores of facial features associated with aging, graded by dermatologists.

Objectives: To develop a fast, accurate and reproducible diagnostic tool to measure 5 skin biomarkers and an algorithm to automatically interpret biochemical data.

Materials and Methods: A multi-centric, single blind study was performed on 376 Caucasian women aged 30-75y. 17 facial features were scored by expert dermatologists. D-squams were taken for biomarkers measurements of 5 proteins.

Results: A multiplexed skin proteomic biomarker panel (SPBP), using microfluidic cartridges, was developed for the determination of 5 biomarkers through a 4 easy step procedure: 1- a non-invasive skin sampling (d-squames), 2- a protein extraction in PED® device, 3- a protein assay using microfluidic cartridges and FRENDTM system, and 4- an automatic interpretation of biochemical data using an in-house developed algorithm.
The custom SPBP assay was evaluated for its specificity, analytical sensitivity, accuracy and reproducibility on 17 clinical signs of ageing. Seven clinical signs covering many concerns of women such as: shininess, roughness, skin tone, wrinkles of the ocular region, photo-ageing, flaccidity and pore size were correlated to biomarker concentration. The results of the analytical validation yielded a decision tree for the prediction of appearance and a classification of the clinical signs based on their deviation to the norm.
Further, preliminary data suggest that some of these biomarkers can predict the response to retinol treatment.

Conclusion: A fast diagnostic tool was developed to measure 5 skin biomarkers in less than 10 min. The concentrations of biomarkers correlated with scores of facial features and an

algorithm was developed to automatically interpret the biochemical data.